

Abstract

Pump and cannula systems inserted through the right side and/or left side of the heart provide protection against collapse of the heart chambers and veins and arteries and provide supplemental blood flow through same to enable beating heart  
5 bypass surgery on all vessels of the heart, including lateral and posterior vessels. The invention eliminates the use of cardiopulmonary bypass (CPB) machines. The invention further provides stents adapted for protecting from vein, artery, atrium and/or ventricle collapse during beating heart bypass surgery.